

1 CLAIMS

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3 1. A vehicle separable hands free unit for a

4 mobile wireless telephone having internal audio circuitry

5 for an internal speaker and an internal microphone, compris-

6 ing: a base unit, a vehicle separable connector quickly

7 connectable to the vehicle's power supply for supplying

8 power to the base unit, said base unit including a hands

9 free speaker and a hands free microphone, AHF control means

10 in the base unit for commanding the telephone to disconnect

11 the telephone's internal speaker and internal microphone and

12 connect the internal audio circuits to the base unit and to

13 activate the base unit hands free speaker and hands free

14 microphone, PHF control means in the base unit for command-

15 ing the telephone to connect the telephone's internal

16 speaker and internal microphone to the internal audio cir-

17 cuits and to deactivate the base unit hands free speaker and

18 hands free microphone, and a manually operable switch in the

19 base unit for selecting alternatively the AHF control or the

20 PHF control.

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22 2. A vehicle separable hands free unit for a

23 mobile wireless telephone as defined in Claim 1, wherein the

24 switch includes a user finger operable optical switch.

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2 3. A vehicle separable hands free unit for a
3 mobile wireless telephone as defined in Claim 1, wherein
4 the AHF control means and the PHF control means are incor-
5 porated in part in a microprocessor in the base unit, said
6 microprocessor generating and sending an ID request packet
7 to the phone, receiving an ID packet from the phone to
8 determine the model of telephone.
9

10 4. A vehicle separable hands free unit for a
11 mobile wireless telephone as defined in Claim 3, said
12 microprocessor utilizing the ID packet from the phone to
13 identify a look-up value on a table, said microprocessor
14 utilizing the look-up value to generate an AHF packet and
15 send it to the telephone as part of the AHF control means.
16

17 5. A vehicle separable hands free unit for a
18 mobile wireless telephone as defined in Claim 3, said
19 microprocessor utilizing the ID packet from the phone to
20 identify a look-up value in a table, said microprocessor
21 utilizing the look-up value to generate a PHF packet and
22 send it to the telephone as part of the PHF control means.
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6. A vehicle separable hands free unit for a mobile wireless telephone as defined in Claim 1, including a microprocessor in the hands free unit for requesting model number identification from the phone and utilizing that identification to develop commands to the telephone in the AHF control means and the PHF control means.

7. A vehicle separable hands free unit for a mobile wireless telephone as defined in Claim 1, said base unit including a duplexing circuit for attenuating the level of the hands free microphone at predetermined values of the telephone's internal audio circuits.

8. A vehicle separable hands free unit for a mobile wireless telephone having internal audio circuitry for an internal speaker and an internal microphone, comprising: a base unit, a vehicle separable connector quickly connectable to the vehicle's power supply for supplying power to the base unit, said base unit including a hands free speaker and a hands free microphone, a microprocessor in the base unit for sending an ID request packet to the telephone and receiving a phone ID packet from the phone, said microprocessor utilizing the same ID packet to generate an AHF packet to the telephone for commanding the telephone

1 to disconnect the telephone's internal speaker and internal
2 microphone and connect the internal audio circuits to the
3 base unit and to activate the base unit hands free speaker
4 and hands free microphone.

5
6 9. A vehicle separable hands free unit for a
7 mobile wireless telephone as defined in Claim 8, said
8 microprocessor utilizing the phone ID packet to generate a
9 PHF packet to the telephone for commanding the telephone to
10 connect the telephone's internal speaker and internal
11 microphone to the internal audio circuits.

12
13 10. A vehicle separable hands free unit for a
14 mobile wireless telephone as defined in Claim 8, said
15 microprocessor repeatedly sending the AHF packet to the
16 telephone to maintain the telephone in an AHF mode when
17 desired.

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19 11. A vehicle separable hands free unit for a
20 mobile wireless telephone as defined in Claim 9, said
21 microprocessor repeatedly sending the PHF packet to the
22 telephone to maintain the telephone in a PHF mode when
23 desired.

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1 12. A vehicle separable hands free unit for a
2 mobile wireless telephone as defined in Claim 8, said
3 microprocessor utilizing the ID packet from the phone to
4 identify a look-up value in a table, said microprocessor
5 utilizing the look-up value to generate an AHF packet and
6 send it to the telephone as part of the AHF control means.

7
8 13. A vehicle separable hands free unit for a
9 mobile wireless telephone as defined in Claim 8, said
10 microprocessor utilizing the ID packet from the phone to
11 identify a look-up value in a table, said microprocessor
12 utilizing the look-up value to generate a PHF packet and
13 send it to the telephone as part of the PHF control means.

14
15 14. A vehicle separable hands free unit for a
16 mobile wireless telephone having internal audio circuitry
17 for an internal speaker and an internal microphone, compris-
18 ing: a base unit, a vehicle separable connector quickly
19 connectable to the vehicle's power supply for supplying
20 power to the base unit, said base unit including a hands
21 free speaker and a hands free microphone, a microprocessor
22 in the base unit for sending an AHF packet to the telephone
23 for commanding the telephone to disconnect the telephone's
24 internal speaker and internal microphone and connect the in-

1 ternal audio circuits to the base unit, and to activate the
2 base unit hands free speaker and hands free microphone, said
3 microprocessor repeatedly sending the AHF packet to the
4 telephone for maintaining the telephone in an AHF mode.

5
6 15. A vehicle separable hands free unit for a
7 mobile wireless telephone as defined in Claim 14, said
8 microprocessor sending a PHF packet to the telephone for
9 commanding the telephone to connect the telephone's internal
10 speaker and internal microphone to the internal audio cir-
11 cuits, said microprocessor repeatedly sending the PHF packet
12 to the telephone to maintain the telephone in a PHF mode.

13
14 16. An aftermarket hands free unit for a mobile
15 wireless telephone, comprising: a base unit having an in-
16 tegral generally annular nose insertable into a vehicle
17 power socket, said base including a housing with upper and
18 lower housing portions, a circuit board clam shelled between
19 the upper and lower housing portions, and a speaker clam
20 shelled between the circuit board and the upper housing por-
21 tion.

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1 17. An aftermarket hands free unit for a mobile
2 wireless telephone as defined in Claim 16, wherein the upper
3 housing portion has a grill for the speaker.

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5 18. An aftermarket hands free unit for a mobile
6 wireless telephone as defined in Claim 16, including a
7 finger insertable recess in the housing with a switch
8 therein for operating the hands free unit.

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10 19. An aftermarket hands free unit for a mobile
11 wireless telephone as defined in Claim 18, wherein the
12 switch is an optical switch.

13
14 20. An aftermarket hands free unit for a mobile
15 wireless telephone, comprising: a base unit having an in-
16 tegral generally annular nose insertable into a vehicle
17 power socket, said base including a housing, a finger in-
18 sertable recess in the housing with a switch thereon for
19 operating the hands free unit.

20
21 21. An aftermarket hands free unit for a mobile
22 wireless telephone as defined in Claim 19, wherein the
23 switch is an optical switch.

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22. A vehicle separable hands free unit for a mobile wireless telephone having internal audio circuitry for an internal speaker and an internal microphone, comprising: a base unit, a vehicle separable connector quickly connectable to the vehicle's power supply for supplying power to the base unit, said base unit including a hands free speaker and a hands free microphone, and a duplexing circuit in the base unit for attenuating or interrupting the hands free microphone level at a predetermined audio level of the hands free speaker.

23. A vehicle separable hands free unit for a mobile wireless telephone having internal audio circuitry for an internal speaker and an internal microphone, comprising: a base unit, a vehicle separable connector quickly connectable to the vehicle's power supply for supplying power to the base unit, said base unit including a hands free speaker and a hands free microphone, and a circuit in the base unit permitting connection of the base unit to a phone during a call without interrupting the call.

1 24. A vehicle separable hands free unit for a
2 mobile wireless telephone as defined in Claim 23, including
3 means for activating the base unit while the call is in
4 process.

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6 25. A vehicle separable hands free unit for a
7 mobile wireless telephone having internal audio circuitry
8 for an internal speaker and an internal microphone, compris-
9 ing: a base unit, a vehicle separable connector quickly
10 connectable to the vehicle's power supply for supplying
11 power to the base unit, said base unit including a hands
12 free speaker and a hands free microphone, and a circuit in
13 the base unit for reducing echo from the speaker.

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15 26. A vehicle separable hands free unit for a
16 mobile wireless telephone as defined in Claim 25, wherein
17 the means to reduce echo from the speaker includes click
18 less opto resistors.

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20 27. A vehicle separable hands free unit for a
21 mobile wireless telephone as defined in Claim 25, including
22 means for summing inverted ground signals with audio signals
23 to cancel noise.

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